BTEC Assignment Brief

Qualification	Pearson BTEC International Level 3 Foundation Diploma in Applied Science Pearson BTEC International Level 3 Diploma in Applied Science Pearson BTEC International Level 3 Diploma in Biomedical Science Pearson BTEC International Level 3 Diploma in Environmental Science Pearson BTEC International Level 3 Extended Diploma in Applied Science Pearson BTEC International Level 3 Extended Diploma in Biomedical Science Pearson BTEC International Level 3 Extended Diploma in Environmental Science
Unit number and title	**Unit 7: Principles and Applications of Physics II**
Learning aim(s)	**A:** Understand thermal physics, materials and fluids
Assignment title	**Thermal energy, material characteristics and fluid behavior**
Assessor	
Issue date	
Hand in deadline	

Vocational Scenario or Context	You have recently applied to a large manufacturing company for a junior position and have been accepted as a trainee apprentice. The company manufactures and tests a wide range of products for the home and industry and specializes in materials quality testing, heat engines, pumps and fluid viscosity testing. Your role as a junior testing engineer, involves a six month initial chaperone by a very experienced senior engineer with the company and is followed by intensive further study and practical application of your developing engineering knowledge.

Task	Produce a document, intended for use by both new recruits and experienced staff members, which acts as reference material providing useful definitions, units and fundamental terms which are encountered when working with heat, materials and fluids. This work should include: ● Description of relevant quantities and associated units ● Explanations of definitions used in thermal physics, materials and fluids ● Example calculations which are used to show efficiency applied to industrial applications. ● An explanation of the application of thermal physics in both the home and industry ● An explanation indicating where physical aspects of materials and relevance of fluid flow aspects apply in the home and in industry and an Analysis of their importance. ● Demonstration of concepts and changes of state by applying examples to given situations and example calculations for ideal gases, first law of thermodynamics, specific and latent heat calculations, to include practical activities demonstrating specific heat capacity and changes of state. ● Produce a report which explains the following physical concepts

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	applied to materials in domestic and industrial settings. Provide suitable example calculations where appropriate. You will need to demonstrate an understanding of the use of relevant quantities and units by providing suitable definitions and example calculations, obtained using suitable practical activities: ● Density, tensile and compressive stress and strain, Young's modulus and Hooke's Law Mathematical presentation from the results of the experiments carried out will be clear and accurate, and interpreted to demonstrate the concepts investigated. Explain the following concepts in fluid flow and apply them in appropriate domestic and industrial situations. These will include: ● Viscosity and viscous drag ● Streamline and turbulent fluid flow patterns including pressure ● Non-Newtonian fluid flow ● Mass of fluid flow per second ● Bernoulli's principle
Checklist of evidence required	A report that includes: ● A description of relevant quantities and associated units ● Explanations of definitions used in thermal physics, materials and fluids ● Calculations of efficiency ● Practical investigations into the concepts involved ● A report into materials, density, stress/strain, Young's modulus and Hooke's Law, with calculations ● An explanation of viscosity, fluid flow patterns, measurements of fluid flow and Bernoulli's principle

Criteria covered by this task:	
Unit/Criteria reference	To achieve the criteria, you must show that you are able to:
A.D1	Analyse the importance of thermal physics, materials and fluids in home and industrial situations
A.M1	Explain how the principles of thermal physics applies to the home and industry
A.M2	Explain the physical aspects of materials in relation to their use in the home and industry
A.M3	Explain the concepts of fluid flow as applied to the home and industrial situations
A.P1	Describe the general applications of thermal physics in the home and industry
A.P2	Outline the physical aspects of materials in the home and industry
A.P3	Describe the main aspects of fluids as applied to home and industrial situations
Sources of information to support you with this Assignment	www.physicsandmathstutor.com › Physics Revision › Edexcel A-Level www.sciencedaily.com › terms › materials_science

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